

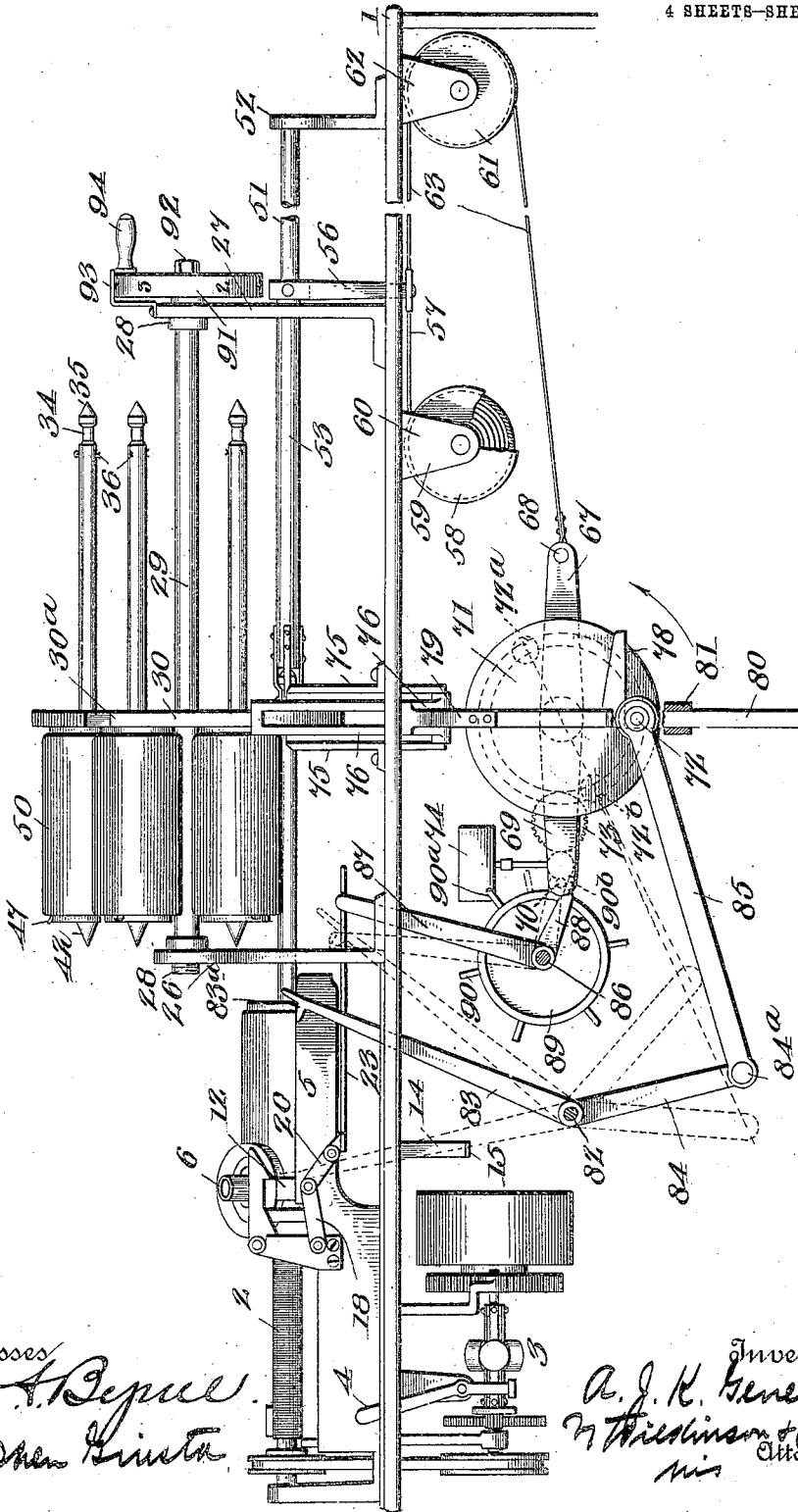
A. J. K. GENELLA.
 MULTIPLE RECORD GRAPHOPHONE.
 APPLICATION FILED JULY 31, 1905.

979,466.

Patented Dec. 27, 1910.

4 SHEETS-SHEET 1.

Fig. 1.



Witnesses
Geo. T. Deane
Stephen K. Smith

Inventor
A. J. K. Genella
W. H. Dickinson & Sons
 Attorneys

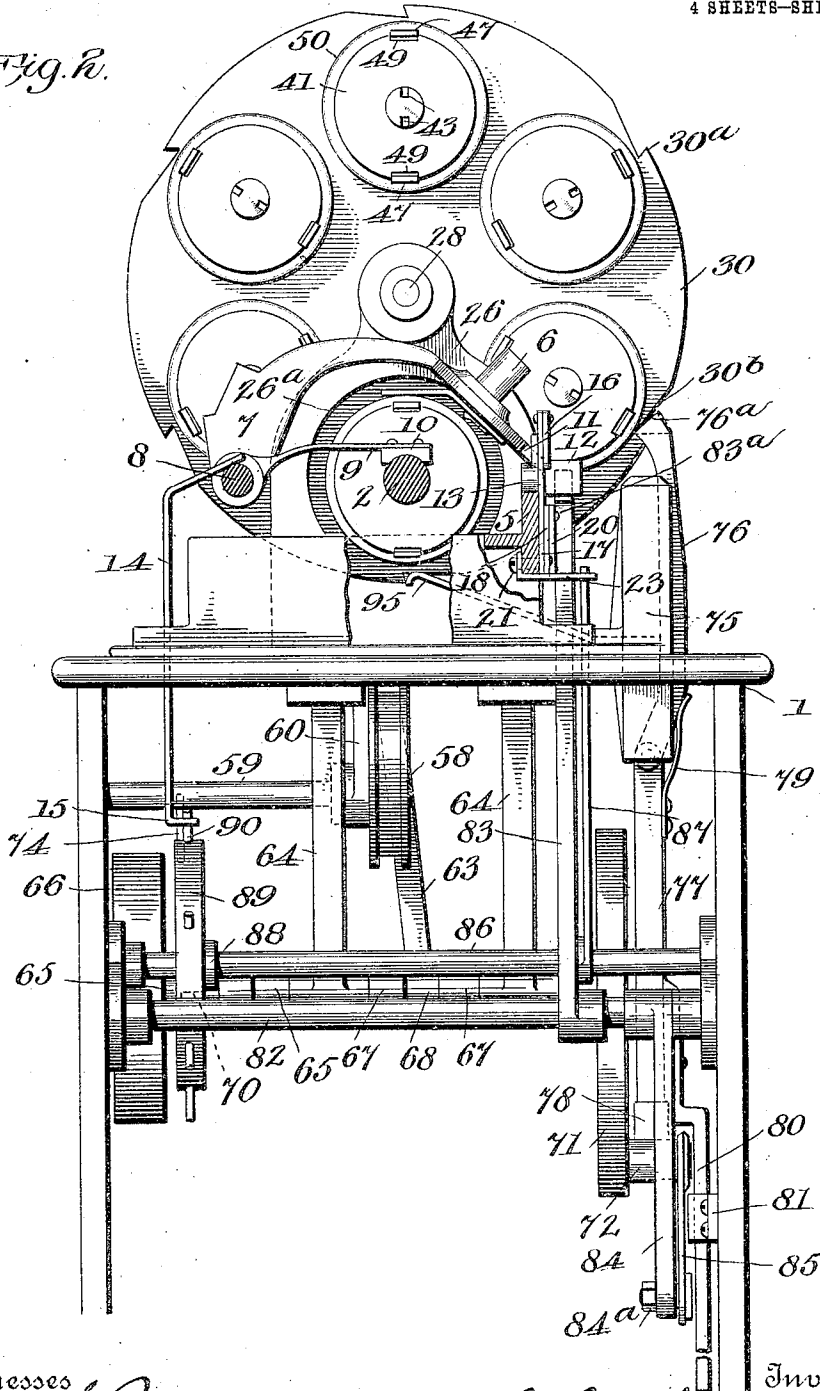
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4 SHEETS—SHEET 2.

Fig. 2.



Witnesses

Geo. H. Byrne
Joseph A. Kinsten

Inventor

A. J. K. Genella
W. H. Kinsman & Son
Attorneys

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4 SHEETS—SHEET 3.

Fig. 3.

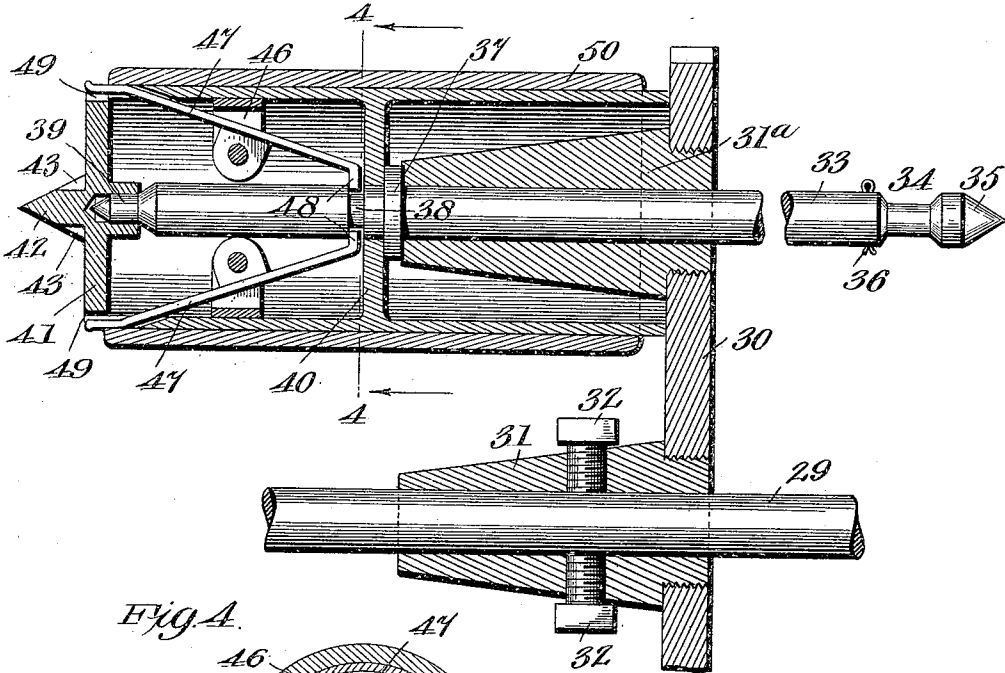


Fig. 4.

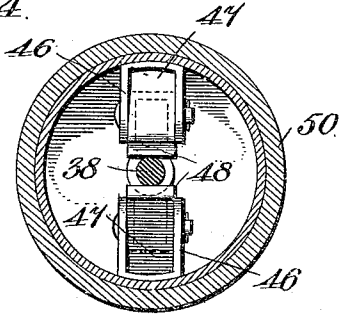


Fig. 5.

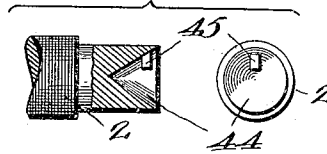
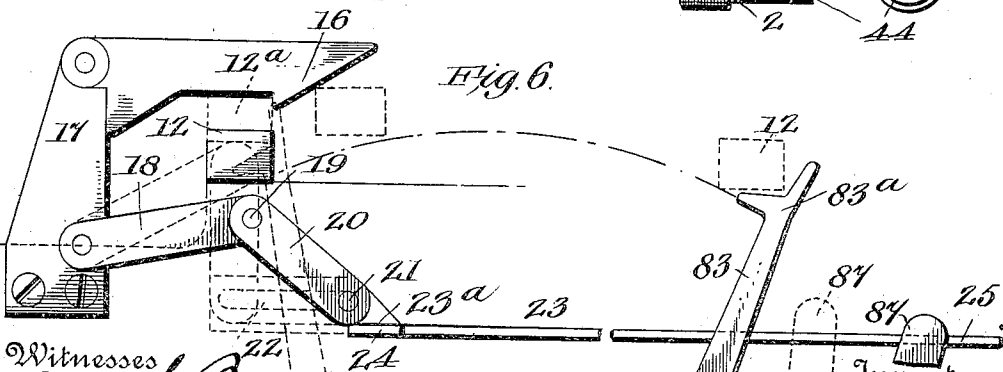


Fig. 6.



Witnesses
 Geo. H. B. B. B.
 Stephen B. B.

Inventor
 A. J. K. Genella
 By Wilkinson & Finner
 Attorneys

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 MULTIPLE RECORD GRAPHOPHONE.
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4 SHEETS—SHEET 4.

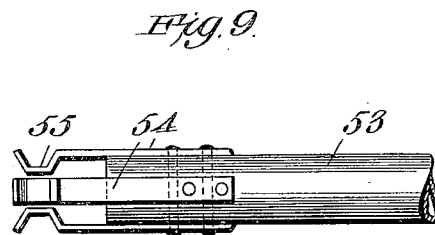
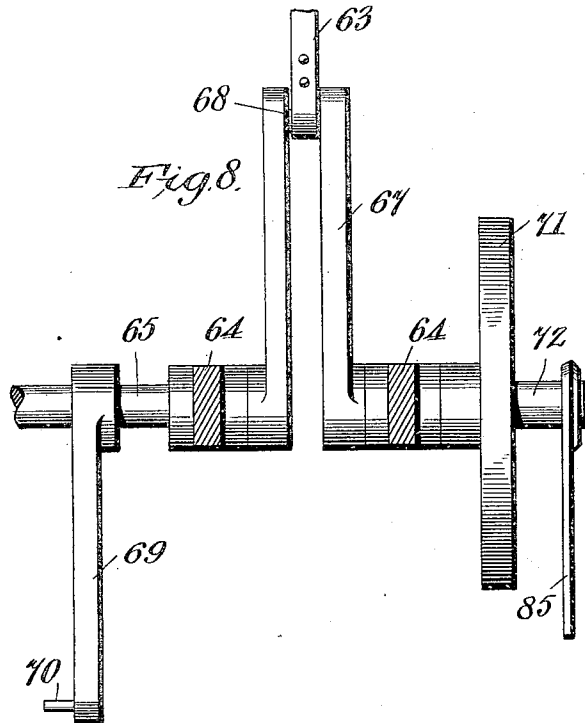
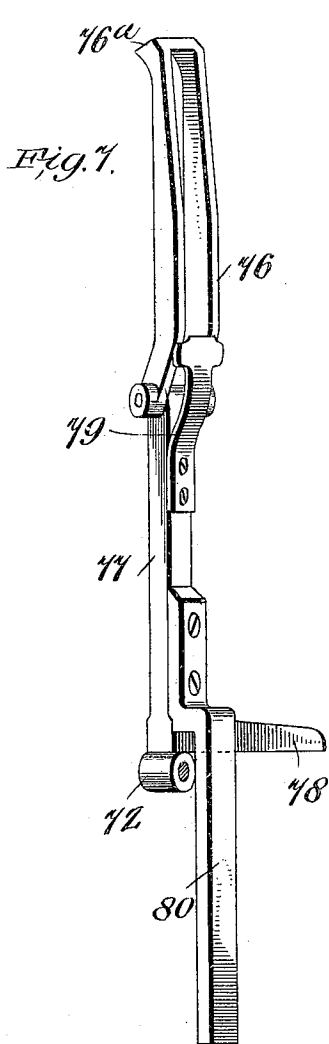
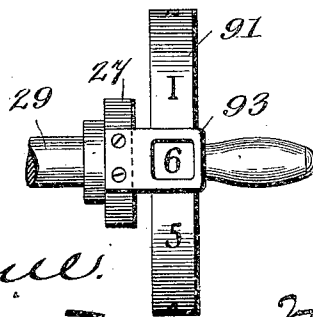


Fig. 10.



Witnesses

Geo. A. Rippe
Stephen Krusta

Inventor

A. J. K. Genella
W. Dickinson & Finner
Attorneys

UNITED STATES PATENT OFFICE.

ALPHONSE J. K. GENELLA, OF NEW ORLEANS, LOUISIANA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GEORGE H. UNDERHILL, OF BOSTON, MASSACHUSETTS.

MULTIPLE-RECORD GRAPHOPHONE.

979,466.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed July 31, 1905. Serial No. 271,939.

To all whom it may concern:

Be it known that I, ALPHONSE J. K. GENELLA, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Multiple-Record Graphophones; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in graphophones, gramophones and like machines, particularly to that class of the multiple record type.

It is obvious that it may be desirable to run off several records successively without interruption and without assistance of an operator, and this may be especially true in slot machines, and more particularly in cases where the machine is used for purposes of dictation wherein the subject-matter to be dictated would cover a number of record members.

The principal object of this invention is to provide mechanism, automatic in its operation, which will subserve this end.

Other objects and advantages will appear from the following description and the features of novelty of the invention will be more succinctly pointed out in the claims.

While in the following specification, for the purpose of simplicity, the invention is described more particularly with reference to graphophones of the ordinary type employing the usual reproducer and cylindrical record, it will be understood that the invention is not limited to this particular type of a reproducing machine, and the term "stylus" is employed to cover a recorder or a reproducer as the case may be, while the term "record member" or "record" is used to cover any kind of a record member before or after the record has been produced thereon, or whether the record member be used in connection with a machine of the graphophone or gramophone type, it being quite immaterial, whether or not the undulatory grooves of the record are of varying depth or width respectively.

To more fully describe the invention, reference is had to the accompanying drawings, illustrating an application of same, in which like letters designate the same parts in the several views, and in which:—

Figure 1 is a side elevation of the operating mechanism of the improved machine, certain minor parts being broken away. Fig. 2 is an end elevation looking to the right in Fig. 1, parts being broken away. Fig. 3 is a sectional view in detail of the rotary disk and one of the record members thereon, the disk, the record spindle and the supporting axis being broken away. Fig. 4 is a transverse section on the line 4—4 of Fig. 3. Fig. 5 is a fragmentary detail partly in section and an end view of the inner end of the stylus feed screw. Fig. 6 is a view in elevation, showing the operating members for returning the stylus to its initial position and holding the same raised until a new record has been placed in position, certain positions of the parts in this view being shown in dotted lines. Fig. 7 is a detail perspective view of the pawl member for automatically operating the revoluble disk. Fig. 8 is a plan view of the crank shaft and parts connected therewith, the hanger bars being shown in cross section. Fig. 9 is a detail view of an end of the plunger rod, and Fig. 10 is a detail view of means for rotating the rotary disk independently of the automatic means, and indicating the position of the records thereon.

1 designates a suitable frame-work, 2 the feed screw for the stylus, and 3, Fig. 1, the usual operating means for actuating the feed screw, 4 designating the usual thumb lever for starting or stopping the power actuated driving means.

5 is a plate or casing forming a means of support for the feed screw and also a protecting guard for the record.

6 is the usual recorder or reproducer which for brevity is termed the stylus carried by the arm 7 mounted on the bar 8 and brought into operative relation with the feed screw 2 by means of the arm 9 and threaded member 10. 11 is a short extension on the stylus having an enlarged head or a lug 12 thereon, the said lug 12 having a roller bearing 13 mount-

ed on its inside face and adapted to ride on the casing 5. The arm 7 also carries a depending rod 14 having a bent end 15, the function of which rod will hereinafter appear.

Referring particularly to Fig. 6, a latching mechanism is shown for holding the stylus elevated, when shifted back to its initial position, until the next record has been put in place, the operation of which latching mechanism will be hereinafter described. The details of this construction consist of a latch member, having the hook 16, normally disposed horizontally and pivotally connected to an upright 17 secured to the support 5. Below the latch member and pivotally connected at one end to the upright 17 is a flat link 18 pivotally connected as at 19 to the end of a similar link 20 having a pivot screw 21 operating in a slot 22 formed in a vertical flange of an oscillating plate 23, which oscillating plate has the lugs 24 and 25 projecting edge-wise thereof. In this figure the solid lines indicate the position of the parts when the stylus initially engages the record member, while the dotted lines to the left indicate the position of the parts when the stylus has been returned to its initial position and forced into engagement with the latch member 16 to hold the same in its elevated position until the old record has been replaced by the new one.

26 is a standard suitably secured to the frame 1, which standard has an enlarged base portion with an annular opening 26^a therein. 27 is a standard also suitably secured to the main frame 1. Both of these standards at their upper ends are provided with the detachable bearings 28 in which bearings is journaled reduced ends of a main shaft 29, the outer end of said shaft projecting beyond the standard 27. On this main shaft 29, referring particularly to Fig. 3, is mounted a disk 30 provided on its circumferential edge with a plurality of ratchet teeth 30^a and on its inner face with a detachably mounted elongated central bearing 31 and a plurality of circumferentially disposed similar bearings 31^a. The shaft 29, passing through the bearing 31, is securely locked to the disk by the set screws 32, so that the disk and the shaft 29 rotate together.

Freely passing through the bore of each of the elongated bearings 31^a is the reciprocating spindle 33 having the reduced portion 34 and headed portion 35 preferably conical, forming a recessed outer end.

36 is a stop which may be of the split pin type.

37 is an annular shoulder formed on the spindle, 38 a reduced portion forming an annular recess, and 39 a reduced end, forming a pintle preferably finished off conically.

Adapted to be mounted on the spindle is a

mandrel having the central apertured web 40 and outer end plate 41 provided with the conical bearing 42 having a plurality of recesses 43, which conical bearing is adapted to be brought into engagement (Fig. 5) with a conical depression 44 in the inner end of the feed screw 2, which conical depression is provided with the inwardly projecting lug 45. The mandrel is also provided with a plurality of U-shaped internal bearings 46, to which are pivotally secured the spring arms 47 having projections 48 adapted to rest in the recessed portion 38 and the outer ends of said spring arms extending through elongated apertures 49 in the cylindrical and end faces of the mandrel, which projecting ends may be operated to spring the projections 48 out of engagement with the operating spindles, for readily removing the mandrel and the record 50 carried thereby. It might be stated here that this particular construction of a mandrel and the spindle with reference to the spring arms 47 and the recessed portion 38 would be unnecessary excepting for the fact that the present form of records have a tapering bore, the enlarged end of which is to the left of the record, so that in use, with records of the present type, it is necessary to slip the record on the mandrel from the right hand side of the mandrel, and this particular structure allows of a ready means of removing the mandrel and record for this purpose, to replace a new record without pulling out the spindle 33, the right to left movement of which is limited by the stop pin 36. It will be observed, however, that with new forms of records tapering in the reverse direction, this detail construction would be unnecessary as the mandrel could be revolvably mounted on the spindle, in a fixed relation axially, and the record slipped thereon from the left end of the mandrel. However, this particular construction of mandrel might be employed to advantage, as an interlocking means, with either form of record.

51 is a bearing rod rigidly supported by the standard 52, this rod in Fig. 1 being shown broken away.

53 is a hollow reciprocating plunger rod mounted on the rod 51 and adapted to freely pass through an aperture formed in the standard 27. The inner end of this rod (Fig. 9) is provided with a plurality of longitudinally disposed spring clips 54 suitably secured thereto and provided at their free ends with inwardly converging depressed portions 55, adapted to spring over the heads 35, of the spindles 33, into the recessed portion 34 thereof.

56 is a vertically disposed bar connected to the outer end of the hollow plunger rod 53 and to this bar is connected a tape 57 preferably of metal attached at one end to a

power actuated drum 58 journaled on a shaft 59, one end of which may be mounted in the side frame (Fig. 2) and the other end in a hanger bar 60. This drum is preferably a spring-actuated one as shown, of sufficient power to shift the plunger rod 53, with a spindle and record, to the left, as hereinafter described, when the drum is free to revolve.

61 is an idler pulley mounted on a shaft journaled at one end in the main frame and at the other end in a hanger bar 62. 63 is a metallic tape secured at one end to the bar 56, reeling over said pulley 61 and connected at its other end to a crank hereinafter described.

64 are a pair of hanger bars suspending a power actuated shaft 65, the power for rotating same being indicated in the drawings, as a spring actuated drum 66 (Fig. 2). As shown in detail in Fig. 8, this shaft is formed with the spaced crank arm 67 having the connecting crank pin 68 at its outer end, to which is connected one end of the tape 63. Reversely opposed to said crank shaft 67 but out of alinement therewith is the bar 69 rigidly affixed to the shaft 65 and provided at its outer end with the laterally projecting pin 70. Also securely keyed to the shaft 65 is the disk 71 provided with the eccentrically mounted pin 72 acting as a crank pin.

73 (Fig. 1) shows conventionally a connection between the power-actuated drum 66 and a speed governor or fan 74 also operating as a stop, as hereinafter referred to.

75, Figs. 1 and 2, are guide plates suitably secured to the frame 1 on both sides and adjacent to the disk 30, and between these guide plates is slidably mounted a pawl member (shown in detail in Fig. 7) adapted to engage and intermittently rotate said record disk. This pawl member 76 comprises the spaced side members merging at their upper end in a solid beveled cross piece of a peculiar angle (for a purpose hereinafter referred to), the lower ends of said spaced members being pivotally connected to a bar 77 having a laterally projecting foot 78 of a length to extend transversely beyond the path of travel of the pin 72. To this bar is secured a flat spring 79 in engagement with the pawl 76 for holding said pawl against the disk 30 but permitting the pawl to ride freely over the surface of the disk between its teeth.

To the lower end of the foot bar 77 is secured a depending angle bar 80 operating in a socket piece 81 secured to the frame, which depending bar serves as a guide for the vertical reciprocation of the pawl member.

82 is a rock shaft suitably journaled to the side frames, as shown in Fig. 2, which rock

shaft is provided with upwardly and downwardly disposed arms 83 and 84 respectively, arranged at angles to each other and which arms may be provided with any suitable means for adjusting their angular position, such as set screws, it being understood that these arms rock with the shaft 82. The upper arm 83 which I will term the stylus arm is provided with a hooked end 83^a for a purpose hereinafter referred to and the lower arm 84 forms a connecting link between the rock shaft 82 and the disk 71 by means of the link 85 pivoted at one end to the eccentric pin 72 and at its other end to the bar 84 as at 84^a. 86 is another rock shaft suitably journaled in the side frames and on this rock shaft is rigidly secured a lever 87 extending upwardly and adapted to engage the projecting lug 25 of the reciprocating plate 23, which plate 23 is held in position at one end by the pin 21 riding in the slot 22 of the vertical member 23^a of the plate 23, while the other end is slidably supported in a slot through the standard 26. The secondary rock shaft 86 at its opposite end is provided with the tripping lug 88 which is adapted to extend in the path of travel of the pin 70 on the revolving bar 69. It will be understood also that the lever 87 and tripping lug 88 are fixedly secured to the shaft 86, but may be so fixed by means of set screws for adjusting their angular relation. 89 is a wheel rotatably journaled on the rock shaft 86, adjacent said tripping lug, but engaging said shaft with sufficient friction to prevent it revolving too freely. On the peripheral surface of this wheel, which I will term the controlling wheel, are a plurality of projecting pins 90 adapted to be successively engaged by the fan 74 and the pin 70.

91 (Figs. 1 and 10) is an indicating wheel secured to the projecting end of the main shaft 29 by means of a nut 92. This indicating wheel is provided with numerals on its peripheral surface, corresponding with the number of mandrels on the record disk, which numerals are adapted to be brought beneath an apertured plate 93 secured to the standard 27, and this wheel is provided with a handle 94 by which the wheel, the shaft 29, and consequently the record disk 30 may be revolved to bring any record into position independently of the automatically operated pawl before referred to.

In operation, the various parts being in the position shown in Figs. 1, 2, and 6, wherein the stylus is in starting engagement with the left hand end of the record, upon shifting the starting lever 4, thereby imparting a continuous motion to the feed screw 2, the conical point 42 of the spindle being interlocked with the feed screw, this spindle, its mandrel, and record will be ro-

tated while the stylus is being fed therealong. When the stylus has reached the end of the cylinder, the transverse portion 15 of the depending bar 14 will strike one of the pins 90, which will rotate the wheel 89 forwardly, moving the pin 90^a out of engagement with the fan 74. This starts the power actuated wheel 71 revolving in the direction of the arrow (Fig. 1) and with the pin 70 on the revolving bar in engagement with the pin 90^b, will rotate the controlling wheel 89 still farther, bringing the pin 90^a into the position shown in dotted lines, at which position the pin 70 will have left the pin 90^b. As the disk 71 starts to revolve the shaft 82 is rocked at its fastest speed (as the pin 72 approaches the point 72^a) and the hooked portion 83^a being in the position shown in Figs. 1 and 6 (the position of the lug 12 being shown in dotted lines in the latter figure), the lug 12 and consequently the stylus is immediately elevated from the record, moving in an arc of a circle, as indicated in dotted lines in Fig. 6, until it strikes the hooked end 16 of the latch member, forcing the latter upwardly and passing in a position to the left of the hook 16. At the same time the stylus arm 83 striking the lug 24 on the plate 23 will force the pivoted ends of the links 18 and 20 upwardly, which ends engaging beneath the lug 12 will elevate and hold the same elevated in engagement with the hook member 16, as indicated in dotted lines at 12^a in Fig. 6. From the point 72^a, the continued rotation of the wheel 71 will slowly rock the shaft 82 rearwardly until the eccentric pin 72 reaches the position 72^b, when the stylus arm 83 will be in a position beyond its initial position, as indicated in dotted lines. During this rearward movement of the stylus arm 83, it will be seen that when the hooked end 83^a starts to the right, the stylus is held elevated by the links 18 and 20 and the lug 12 being engaged by the hook member 16, the stylus will remain in this position. Upon the eccentric pin moving from the position 72^b to 72 the shaft is slowly rocked forward again and the stylus arm brought to its initial position. From the beginning of the rotation of the disk 71 the eccentric pin 72 being disposed beneath the shoes 78 will elevate the pawl member until the eccentric pin 72 is diametrically opposite its starting point, when the pawl will have engaged with the next tooth 30^a on the record disk 30. Also upon the disk starting, the crank 67 (when it reaches a point substantially in a horizontal plane with the lower peripheral surface of the pulley 61, which initial movement permits of the stylus being raised before the initial movement of the record being withdrawn) exercises a pulling force on the tape 63 which operates the bar 56, re-

ciprocating the hollow plunger 53 along the rod 51 and the spring fingers 55 being in engagement with the headed end of the spindle, will withdraw the spindle and the used record toward its initial position (the record passing through the enlarged circular opening 26^a in the standard 26) until the shoulder 37 on the spindle strikes the end of the bearing 31^a, at which point the mandrel will be in its initial position and the springs 55 upon continued movement of the plunger 53 will spring outwardly and pass over the headed portion of the spindle. The crank pin 68 will now have reached a position diametrically opposite its starting point, and (the pin 72 being in a position, with reference to the disk at right angles to the pin 68), the pin 72 will also at this point have reached a position diametrically opposite its starting point, whereupon it leaves the shoe 78, and the shoe and the pawl member will fall of their own weight, rotating the record disk 30 one notch. By the peculiar construction of the pawl, the rotation of the disk will be locked in the proper position. That is to say the flat surface 76^a will engage the edge surface of the disk, indicated for illustration at 30^b, Fig. 2. To prevent jarring of the record disk by a too sudden drop of the weighted shoe and pawl, there may be provided a spring (Fig. 2) which will act as a retarding means and will also be a further positive means of locking the disk when it has reached its proper position.

When the arm 67 has reached a position diametrically opposite its starting point and starts to leave that position, the tape 63 begins to slack and the spring-operated drum 58 through the tape 57 and rod 56 will begin to force the plunger rod 53 forward, but as the pawl 76 begins to drop at the same moment, the arm 68 starts to leave the position just referred to, the disk will have been rotated before the spring clips 55 strike the headed end of the new spindle which has been brought into position during said rotation, and the spring clips 54, striking the conical headed end 35 of the new record spindle, will be distended and ride over the conical head until the depressions 55 reach the recessed portion 34, when they will recede therein and interlock the plunger rod with the spindle. The continued forward actuation of the plunger rod will then obviously force the spindle with its record toward the stylus. When the crank 67 and the revolving bar 69 are about to assume their initial positions, with the new record nearly in position, the pin 70 on the revolving bar 69 strikes the pin 90^a (being located in the position shown in dotted lines) and rotating the wheel 89 farther brings the next succeeding pin into position

in front of the fan 74. Just before this happens, however, the pin 70 will have engaged the tripping lug 88 which rocks the shaft 86, moving the lever 87 to the right, and the latter being in engagement with the lug 25 will pull the plate 23 to the right, collapsing the links 18 and 20 and allowing the stylus to fall into operative position at the same moment that the point 42 on the mandrel has been interlocked with the feed screw and one of the pins 90 has been brought into position to stop the fan 74, and consequently the power actuated disk 71, when the parts are all in their initial positions. The operation is automatically repeated until the lever 4 is moved to shut off the actuating power for the feed screw.

While the foregoing illustrates an application of the invention, it will be understood that I do not wish to be limited to the exact details as described and illustrated in the drawings, as it is obvious that various modifications might be made without departing from the spirit of the invention, but What I claim is:—

1. The combination with a stylus and feeding means therefor, of a rotary disk, a plurality of reciprocating spindles mounted on said disk, records carried by said spindles, means for reciprocating said spindles, means for intermittently rotating said disk, means for returning said stylus to its initial position, and power controlled mechanism operatively associated with said respective means.

2. The combination with a stylus and feeding means therefor, of a rotary disk, a plurality of reciprocating spindles carried by said disk, an interlocking plunger rod for said spindles, means for operating said plunger rod, means for intermittently rotating said disk, means for returning said stylus to its initial position, and power controlled mechanism operatively associated with said respective means.

3. The combination with a stylus and feeding means therefor, of a rotary disk, a plurality of reciprocating spindles carried by said disk adapted to support the records, a plunger rod, spring fingers on said plunger rod forming an interlocking means between same and said spindle, means for reciprocating said plunger rod, means for intermittently rotating said disk, means for returning said stylus to its initial position, and power controlled mechanism operatively associated with said respective means.

4. The combination with a stylus and feeding means therefor, of a rotary disk, a plurality of reciprocating spindles carried by said disk adapted to support the records, a stop for limiting the reciprocation of said spindles, heads formed on one end of said spindles, a plunger rod, spring clips having

depressed portions carried by said plunger rod, adapted to spring over said headed portion of the spindles and form a detachable interlocking means between one of said spindles and said plunger rod, means for reciprocating said plunger rod, means for intermittently rotating said disk, means for returning said stylus to its initial position, and power controlled means operatively associated with said respective means.

5. The combination with a stylus and feeding means therefor, of a rotary disk provided with ratchet teeth on its peripheral edge, a plurality of reciprocating spindles carried by said disk and adapted to support the records, means for reciprocating said spindles, means for intermittently rotating said disk, comprising a reciprocating spring controlled pivoted pawl engaging said disk, and composed of spaced side bars and a lateral top plate forming an engaging tooth, means for returning said stylus to its initial position, and power controlled mechanism operatively associated with said controlling means.

6. The combination with a stylus and feeding means therefor, of a toothed rotary disk, a plurality of reciprocatingly mounted records thereon and means for reciprocating same, a vertically operating pawl member engaging said disk and provided with a lateral foot at its lower end, an oscillating stylus arm for returning said stylus to its initial position, a power controlled rotary disk, an eccentrically mounted pin thereon adapted to travel in the path of said foot, connecting means between said eccentric pin and stylus arm, means operatively associated with said power controlled disk and said reciprocating records, and means for automatically stopping and starting said power controlled disk.

7. The combination with a stylus and feeding means therefor, of a rotary disk, a plurality of reciprocating record spindles mounted on said disk, an interlocking plunger rod for said spindles, a power actuated shaft, operative connections between said shaft and plunger for reciprocating the latter in one direction and means operatively connected with the plunger for reciprocating same in the reverse direction, means operatively associated with said shaft for intermittently rotating said disk, a revolving arm carried by said shaft, a rock shaft, a star or controlling wheel journaled on said rock shaft, controlling means between said star wheel and power actuated shaft, a tripping lug on said rock shaft, an upright lever on said rock shaft, a pin on said revolving arm disposed in the path of travel of said tripping lug and star wheel, an oscillating stylus arm for shifting the stylus to its initial position, connections between

said stylus arm and said power actuated shaft, a latch for said stylus, vertically moving means for holding said stylus in engagement with said latch, and a reciprocating member controlling said vertically moving means and engaging said lever.

8. The combination with a stylus and means for feeding same, of a rotatably mounted toothed record disk, reciprocating record spindles mounted thereon, an interlocking plunger rod for said spindles, a power actuated crank shaft, a crank on said shaft, a revolving arm on the opposite side of said shaft, flexible means operating between said crank and said plunger rod for reciprocating the latter in one direction; actuating means for reciprocating said plunger rod in the reverse direction, a pin eccentrically carried by said crank shaft, a vertically reciprocating pawl member engaging said rotary record disk, a foot carried by said pawl member disposed in the path of travel of said eccentric pin, a rock shaft, an upright lever on said rock shaft, a tripping lug on said rock shaft, a star controlling wheel on said rock shaft adjacent said

tripping lug, stop mechanism interposed between said star wheel and power actuated shaft, a pin on said revolving arm adapted to be brought into engagement with said star wheel and tripping lug, an oscillating stylus arm, link connections between said stylus arm and eccentric pin, means carried by the stylus adapted to engage said star wheel, a latch for said stylus, means for holding said stylus elevated upon its return to its initial position comprising vertically movable pivoted links operatively associated with said stylus member for forcing same into engagement with said latch, a reciprocating plate connected to one of said vertically moving links, and projections at opposite ends of said plate adapted to be engaged by said stylus arm and upright lever respectively.

In testimony whereof, I affix my signature, in presence of two witnesses.

ALPHONSE J. K. GENELLA.

Witnesses:

C. PERA,

L. J. GENELLA.